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### Chief Characteristics of Nerve Gas

"Nerve gases" are liquids with boiling-points varying from 150° to 250° C. (approx.). They are, therefore, roughly comparable in volatility to kerosene. They are fairly soluble in water and are slowly destroyed by hydrolysis. Alkalis such as solutions of caustic soda or washing soda will decompose them more quickly. They are almost odorless and the vapor is invisible. They have no immediate irritant properties to the eyes, skin, or respiratory tract, therefore, no warning of their presence is given to the subject exposed to them.

Their dangerous and insidious qualities are primarily because their action is that of cholinesterase inhibition—i. e., they prevent the action of the enzyme which, under normal conditions, continuously destroys acetylcholine as it is produced in the body. This leads to the accumulation of acetylcholine and hence all neuromuscular mechanisms are upset. Voluntary muscle, including the muscles of respiration, ultimately becomes paralyzed and smooth muscle passes into a state of spasm. In effect there is a generalized parasympathetic stimulant action.

The total amount of cholinesterase in the body is small and nerve gases inhibit this enzyme for a prolonged period. Therefore, these gases are highly toxic and may be lethal in minute concentrations. They are rapidly absorbed either by inhalation of the vapor, absorption of the liquid through the skin and mucous membranes, or by the ingestion of contaminated food or water. A drop of liquid in the eye or the inhalation of a high concentration of vapor for a few seconds may cause incapacity or death within a few minutes. Liquid on the bare skin penetrates somewhat less rapidly, but 2 or 3 drops may kill within half an hour. Ordinary clothing cannot be relied on for protection as it is quickly penetrated.

The inhibition of cholinesterase activity may persist for many weeks so that repeated exposures to very low concentrations may have a cumulative effect.

The signs and symptoms of poisoning can be divided into primary and secondary classes.

Primary due to direct action of the nerve gas. There is copious salivation, slowing of the heart, constriction of the pupils, headache, nausea, diarrhea, vomiting, muscular weakness, and sometimes generalized muscular fibrillation. The muscles of respiration are weakened or paralyzed, the diaphragm being affected most. The bronchial musculature may be in spasm.

Secondary due to the anoxia brought about by respiratory paralysis. This will produce cyanosis, venous congestion, low blood pressure, convulsions, and possibly pulmonary edema.

Death occurs suddenly from the effects of anoxia.

Since comparatively few cases of poisoning have occurred, the clinical picture is imperfectly known. The following features have been recognized:



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A severe case of nerve-gas poisoning will present itself as one of acute asphyxia. The subject may be unconscious from anoxia with cyanosis, sweating, and pallor. Breathing will be labored and wheezing in character, similar to that of an acute asthmatic attack. While conscious, the subject will be anxious and suffering from air hunger, there may be restlessness and lack of cooperation due to the effects of the anoxia.

In mild cases the main respiratory symptom will be tightness of the chest and throat. There will be intense headache, constriction of the pupils, and difficulty of near vision. There may be nausea, vomiting, dizziness, abdominal pain, and diarrhea. These symptoms may begin several hours after exposure and may persist for days if untreated.

To be effective treatment must be immediate, because of the danger from anoxia. Atropine is the antidote to the nerve gases. If there is severe respiratory distress and cyanosis, artificial respiration must be started at once and maintained until adequate respiration returns of its own accord.

Antidote. Subjects suffering from nerve-gas poisoning tolerate large doses of atropine. An initial dose of 2 mg. (gr.  $1/32$ ) should be given intramuscularly. This dose should then be repeated—by either the intravenous or intramuscular route—until such time as the symptoms of poisoning disappear. A useful sign of the degree of atropinization achieved is the pulse rate, and the dose of atropine should be repeated to maintain a pulse rate of from 110 to 120 beats per minute. (The signs of atropine poisoning are largely psychotic, with mania, extreme excitement, and restlessness. The latter must not be confused with the restlessness that occurs following anoxia. As much as 12 mg. atropine sulfate in 16 hours has been given in nerve gas intoxication.)

Artificial respiration. The method recommended is a small hand bellows which will ventilate the lungs in spite of the bronchial constriction. When using the hand bellows the patient should be supine and the attendant should kneel to the right of the head. His left hand should encircle the face and hold the face-piece firmly in position; the face-piece must fit under the chin. The attendant's other hand should work the bellows so that the main force is exerted at an angle of  $30^{\circ}$  to the horizontal. This is to ensure that the lower jaw and tongue do not fall back and obstruct the air passages. The pressure used should not exceed 20 cm. of water, since with higher pressures the lung and stomach may be overinflated. The resuscitator illustrated has a safety valve on the face-piece which blows off at 20 cm. Ventilation should be carried out at a rate of 20 to 30 times a minute and should be continued until the subject is capable of breathing adequately himself. This will probably occur within 30 minutes, but it must be remembered that respiration may fail again due to excessive elimination of carbon dioxide during the artificial ventilatory period; hence the subject should be kept under observation. During artificial ventilation the stomach will be inflated with air by the resuscitator. This



will cause some respiratory embarrassment when normal respiration is re-established. It can be minimized, however, by firm pressure over the stomach; applied intermittently to force the air up the esophagus. During this maneuver the patient's head and shoulders should be raised, to ensure that it is air and not the liquid contents of the stomach which is forced into the esophagus. While artificial ventilation is being carried out, there will be excessive salivation and, if practicable, this should be allowed to drain away by periodically tilting the subject's head down. If no form of positive pressure ventilatory apparatus is available then manual artificial respiration should be performed. Oxygen, if available, should be used in conjunction with this.

In mild cases of nerve-gas poisoning the eye symptoms and headache are best treated by the instillation of atropine drops or ointment in the eye. This should be used as an adjunct to parenteral atropine therapy if necessary.

In the event of toxic liquid being splashed on the skin it should be washed off immediately with plenty of water. As soon as this has been done, ordinary anti-gas ointment should be applied as the subject will be unable, at this stage, to know whether the liquid is nerve or mustard gas.

If the clothing is contaminated, the outer clothing should be removed at once and the skin washed as soon as possible.

The above first-aid treatment should be within the competence of trained nonmedical personnel and, in certain emergencies, will have to be carried out by them to save life. (The Lancet, Aug. 9, 1952, a memorandum from the Ministry of Supply)

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### Split-Thickness Skin Grafting of Amputation Stumps

Since the outbreak of the Korean War a large number of patients have returned with open amputation stumps, the value of which has been well established. Amputees are sent to the Amputation Center, U. S. Naval Hospital, Oakland, Calif., for definitive treatment, and the first problem is closure of the wound, which will necessarily vary with the type of open stump encountered. This article discusses the use of the split-thickness skin graft in accomplishing closure of certain types of open stumps. Partial hand or foot amputations are not discussed, only major amputations.

Three types of open amputation stumps have been admitted for definitive treatment: (1) open flap, (2) open circular, and (3) guillotine, the latter frequently seen constitutes a major problem because the stump was formed, either out of necessity to conserve all usable tissue or by the inexperienced surgeon who has confused the term "guillotine" with the "circular" type.



At the Center split-thickness grafts have been liberally used: (1) as a form of secondary closure; (2) to repair surface defects of stumps; (3) to conserve length of the short above-the-knee stump; and (4) to conserve length of the short below-the-knee stump.

Patients who have skin grafts applied, either to the terminal portions of their stumps or to surface defects, are fitted with the same prostheses used for other patients.

The split-thickness skin graft has proved satisfactory for closure of certain types of open amputation stumps. The simplicity of application of the split-thickness skin graft is a definite advantage. If skin grafts are to be used at all, a split-thickness skin graft should be tried first, before embarking on the complicated full-thickness skin grafting procedures.

As a method of secondary closure of the terminal end of open guillotine stumps, skin grafting creates a clean field for further surgery, minimizes pain, saves time, and decreases the incidence of osteomyelitis.

The split-thickness skin graft can be used successfully to cover surface defects of stumps without interfering with the use of a prosthesis.

This method, when applied to the short below-the-knee open guillotine stump, has saved valuable length and the knee joint itself in patients who otherwise may have been above-the-knee amputees. (Plast. & Reconstruct. Surg., Aug. 1952, CDR. T. J. Canty, MC, USN and LTJG. E. E. Bleck, MC, USNR)

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#### The Surgical Treatment of Carcinoma of the Hypopharynx, Larynx, and Upper Esophagus

The over-all decrease in the mortality rates for surgery of the esophagus and hypopharynx has encouraged an ever broadening horizon in regard to the aggressive surgical attack on such lesions. The rare operation of 10 years ago has now become an almost commonplace procedure. Credit belongs not only to those who have perfected the technical details of the operative procedures but also to improvements in anesthesia and to the contributions of physiologists who have solved so many of the problems of the pulmonary and cardiovascular systems. Chemotherapy and the antibiotic agents have added their increment of improvement in combating and preventing infections, and adequate whole blood replacement therapy during surgery has permitted the confident performance of a deliberate and unhurried operative procedure.

Cancer of the hypopharynx, upper esophagus, and larynx is more closely related to the intra-oral group of carcinomas than to the gastrointestinal malignancies of glandular origin. The resemblance is evident in that epidermoid carcinoma is the common histologic type, the age and sex distribution are similar, and there appears to be a common etiologic



relationship to chronic irritants of various sorts. Contrary to true esophageal cancer which often metastasizes early and widely, carcinoma which arises in the larynx and spills over into the hypopharynx or that which arises in the hypopharynx and secondarily involves the larynx or the upper esophagus often tends to remain localized, and its metastases frequently are limited to the cervical lymphatic chains for a considerable period before ultimate, more rapid, distant dissemination occurs.

During the past 3 years (from March, 1949, through March, 1952) 17 patients with advanced malignant lesions involving the hypopharynx, larynx, and upper esophagus have been treated surgically at the University of California Hospital. The procedure popularized by Wookey of Toronto has been applied and in the majority of the patients treated has been extended to include a unilateral radical neck dissection. The operation is designed to provide a wide en bloc excision of all malignant tissue.

Twelve patients of the 17 operated upon are alive from 1 to 36 months after surgery. Nine of these patients are well, and have shown no evidence of recurrence for from 1 to 24 months. Some have returned to gainful employment. Three patients have tiny pin-point fistulas which thus far persist in spite of all efforts designed for their closure. Fortunately, however, they experience little or no difficulty in swallowing.

With respect to the far-advanced malignant lesions for which this extensive operation is performed, the results are not particularly discouraging. It is reasonable to assume that if the principle of wide en bloc excision is applied to earlier, more localized lesions, the results of surgical treatment will be significantly improved.

As surgery of this magnitude develops to an even greater security, and better results can be expected with increasing frequency, the wider application of extensive surgery for earlier lesions in and about the hypopharynx must be accepted. (J. Thoracic Surg., Sept. 1952, O. F. Grimes and H. B. Stephens)

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#### The Occupational Hazards of Boxing

After a 3-year study, the following recommendations are offered as worthy of adoption by the various state boxing commissions: (1) The improvement of the present gloves and the inner padding was deemed a major research problem. The surface material or leather should be water and moisture repellent. This is necessary because the gloves become wet and soggy after several rounds. The padding inside the gloves should be fixed so that it cannot shift, and the padding should be constructed so that the gloves cannot be "broken." This means that the gloves cannot be twisted and bent so as to dislodge the padding from the punching or knuckle area.

2. The unnecessary and recurrent lacerations about the eyebrow, which mar many a boxing match, can be reduced by properly constructed gloves which have more elasticity and resiliency than the present type of gloves used in the ring. Old, cracked, fissured gloves should never be used, because they produce lacerations quickly.

3. Whether new, well-constructed, light-weight headgear will be necessary in boxing, remains to be determined.

4. The 8-second compulsory count after a knockdown should be enforced. It gives the boxer who slips to the floor or who is knocked down a chance to regain his breath, equilibrium, senses, and muscular and nerve coordination. Three knockdowns in any one round should automatically dictate that the bout has been won. Six knockouts in the record of any boxer should automatically prohibit him from immediate further participation, and a thorough medical check-up should be mandatory.

5. A new safer mouthpiece has been described by Commander H. J. Towle, Jr. of the Naval Dental School. It is not easily dislodged and is made of thin rubber which fits snugly over the upper teeth. This is a great improvement over the present hard-stock dental guard used by boxers. A good well-fitting resilient guard should be made for the individual.

6. An accident survey committee should be established to carry out continuous study of all forms of accidents as they occur in boxing, and to make a close analytical study of each death. Recommendations toward prevention may then be proposed.

7. Two physicians at the ringside, one for each boxer and each corner, appear to be necessary. If one boxer is injured in a preliminary match, a physician can go to the dressing room with him, make an examination, and give first aid. This will not leave the ring without a physician for the next bout. In addition to a stretcher under each ring, there should be a portable oxygen tank and mask available for ringside emergency use. Oxygen has been lifesaving in cases of anoxia, knockouts, unconscious states, and exhaustion.

8. A well-equipped office or room should be available at each arena where the physician can give emergency treatment, suture lacerations, make examinations, and carry on all the other essential and emergency medical measures.

9. To avoid injury in any contact sport, an athlete must be in hardened physical condition. Physicians might well take more interest in physical fitness and in training procedures.

10. Educational programs on the importance of proper rest, good living habits, and well-balanced diet, should be carried out. Victories and championship physical fitness cannot be achieved by drinking, smoking, and incomplete physical training routine.

11. The 30-day period of suspension after a knockout is a good rule. At the end of this period the boxer must be carefully re-examined, as outlined under the rules and regulations. In this way the cumulative effect of



superimposed injury is avoided and the punch-drunk or traumatic encephalopathy syndrome can be prevented from occurring so frequently as in the past. Trauma to the eyeball is said to be due to thumbing with the heavy thumb of the present boxing gloves. In modern gloves the thumb is now curved inward toward the mid-palm, making thumbing an impossibility. Another measure which has been proposed is the immobilization of the leather from the tip of the thumb to the lateral side of the index finger. This would also prevent thumbing which has caused some blindness and many cases of detached retina.

12. A well-equipped, uniform emergency medical and surgical kit is necessary and important. It is now being used in several European countries. The various State boxing commissions should adopt this safeguard, which will benefit both the preliminary fighter and the champion or main-eventer. (Industrial Medicine and Surgery, Sept. 1952, F. R. Ferlaino)

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#### Tuberculous Infection and Tuberculin Matriculation

By tuberculin matriculation is meant the continuous tuberculin testing of the whole population, which is divided at the start into a tuberculin-positive and a tuberculin-negative group. The latter is retested with tuberculin at suitable intervals. The positive group, as well as the converters, are kept under radiologic observation until the risk of disease is minimal. The tuberculin-positive group may possibly also be retested with tuberculin at long intervals.

This study has shown that tuberculin matriculation is a feasible method in tuberculosis control in small towns and rural areas if public health nurses are available. It forms a good basis for following the development of infection from an early state inside the body and for tracing the spread of the disease from sources of infection to contacts. Moreover, it yields necessary information for a clearer insight into epidemiologic situations. The facts demonstrated tuberculosis as an infectious disease which has great possibilities of being fought by purely epidemiologic means which permit early detection and treatment of primary infections and their infectious sources.

The lower the infection rate is in a region, the more important is the epidemiologic approach compared with other mass examination methods. As tuberculosis decreases, it becomes more important to combine tuberculin matriculation with general health examinations within the same program. This leads to decentralization of tuberculosis control and to closer and more permanent supervision of the "healthy" population.

In the author's opinion, mass radiography as a screening mechanism, though of great importance in cities and in persons past middle age, will



not be the basic method in the long run. By repeated tuberculin testing it is possible to uncover fresh primary infections and thereby to focus control efforts on a group of heavily threatened persons. X-ray examination of uninfected persons is thereby avoided. This is important since so many young people are tuberculin negative, and in rural areas distances to public health centers with x-ray equipment are considerable.

Another valuable supplement is BCG vaccination of exposed persons. However, in regions with low infection rates, mass vaccination will be scarcely practical. A steadily increasing number of persons have to be vaccinated and protected against a diminishing threat, thus increasing the relative costs. Most important, in mass vaccination the power to distinguish between the infected and the uninfected is lost. This handicap in case finding makes necessary x-ray examination of all the population. Finally, a cardinal factor in making a correct prognosis of a primary tuberculous infection is the knowledge of the time of onset. This factor cannot be known in a vaccinated population.

Therefore, the author believes that tuberculin matriculation is the fundamental principle in tuberculosis control of the future in regions or populations with low infection rates. The less frequent the occurrence of tuberculosis, the more selective the method must be.

It is valuable to find a case by any method. For the person concerned, however, it is of highest importance to have his infection demonstrated at the earliest possible date, and this can be done only by repeated testing of tuberculin-negative individuals. Tuberculin matriculation will play an even more important role when chemotherapeutic agents become universally available.

The American Journal of Hygiene remarks that the basic article is a condensation of material published in book form in the Norwegian language. It represents a contribution in a field little explored in the United States. The article appears in the American Journal of Hygiene, Sept. 1952, Tobias Gedde-Dahl, Norway.

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#### Salt-Losing Nephritis

The importance of maintaining the sodium and chloride reserves of the body and of recognizing the clinical features resulting from the deprivation of salt as opposed to water was emphasized by McCance and by Marriott. Marriott pointed out that sodium depletion presented an easily recognizable syndrome: weakness, fatigue, giddiness, fainting, muscular cramps, anorexia, nausea and vomiting, and later, hypotension and coma.

Sodium occurs so plentifully and widely that inadequacy is seldom the result of a simple deficiency of intake, unless it is caused by a salt-free diet too strictly prescribed or too conscientiously followed and aggravated

perhaps by the sodium diuresis induced by mercurial drugs. A more common cause of a low sodium state is excessive loss, either by sweating or by vomiting, diarrhea, or fistulae. Finally, too much sodium and chloride may be excreted by the kidneys. This loss may be the result of functional changes in the renal tubules, when a deficiency of adrenal cortical hormones induces failure of tubular absorption, as in Addison's disease; or when, as in certain chronic illnesses, in the absence of any apparent renal lesion, the ability to retain sodium and chloride is impaired. It is evident also that an addisonian picture could, in theory, result from disease of the renal tubules. Although Peters et al. described excessive urinary loss of chlorides in certain cases of nephritis, Thorn et al. were the first to demonstrate what they called "salt-losing nephritis" as a clear clinical picture.

Only 6 cases of salt-losing nephritis have been described. In addition Rosenheim referred to this disorder and briefly cited another possible case. Nevertheless it is possible that similar cases have been reported previously as examples of Addison's disease with hypertension or Addison's disease complicated by chronic nephritis, particularly when such diagnoses have not been confirmed at necropsy. The undoubted authenticity of certain of these cases of combined renal and adrenal failure is acknowledged.

No original descriptions of this condition were found in the literature of England, but it has been the subject of an annotation. In presenting a further 3 cases, therefore, the authors hope to draw attention to an important differential diagnosis of Addison's disease and one whose treatment should, in most cases, be at least temporarily rewarding. Case 1 reported here cannot be considered to be established beyond doubt and is presented as being of historical interest, for, although the disease was not proved to be a salt-losing one, the account of the clinical and pathologic findings accord well with the original description of Thorn et al. All 3 cases were investigated and treated at Guy's Hospital.

The 6 cases of salt-losing nephritis that have been previously reported comprise a clearly defined clinical group. The patients are usually young adults and, except for Thorn's patients, who experienced polyuria, have no history of renal disease or any symptoms suggesting renal insufficiency. The illness begins with any or all of the symptoms of Addison's disease, including tiredness, weakness, anorexia, nausea and vomiting, cramps, collapse, and coma. All 6 of the reported cases and 2 of the 3 presented were at one time diagnosed as adrenocortical failure, and this diagnosis was seriously considered in the authors' other patient. In one patient carcinoma of the stomach was entertained as a possible diagnosis.

Pigmentation of the skin, which has been seen in 3 patients and the almost invariable absence of casts and cells from the urine make the diagnosis even more difficult. Some cases may be recognized by their failure to respond to deoxycortone acetate and adrenocortical extract or by the unusual degree of nitrogen retention and acidosis that exists. The



diagnosis, if correct, can easily be confirmed by renal-function tests, which show gross impairment. Conversely, adrenocortical function, as shown by carbohydrate metabolism, 17-ketosteroid excretion, and response to adrenocorticotrophic hormone, will be found to be normal; whereas, tests of adrenal function that depend on intact renal tubules are invalid in this condition.

Treatment by replacement of the lost sodium and chloride by doses of up to 20 gm. of salt daily has enabled some patients to spend the rest of their lives in fair health. The longest recorded survival period has been 4-1/2 years. Correction of acidosis by sodium bicarbonate (15 gm. per day) has been tried by Sawyer and Solez, but Nussbaum et al., who used sodium acetate, observed that a restoration of the alkali reserve of their patient was associated with clinical deterioration and subsequent death.

The 2 common causes of death seem to be collapse in a state of salt depletion and hypertensive heart failure with uremia, a fate which seems to await those in whom the salt loss has been successfully treated. In addition, these patients, like all nephritics, are ill equipped to overcome the other hazards of existence. One is reported to have died after a surgical operation; another suddenly, possibly as the result of retention of potassium; and a third from pulmonary tuberculosis, a disease which 2 of the authors' 3 patients had. It is recognized indeed that in case 2 the picture of renal salt loss was complicated by the concomitant tuberculosis, which, for example, led to the appearance of pus cells and considerable amounts of protein in the urine. Further, it is arguable that the illness was in some degree caused by active tuberculosis. These reservations are valid but nevertheless the authors consider on clinical and biochemical grounds that sodium depletion was the most important feature of his illness. (The Lancet, Sept. 6, 1952, C. L. Joiner and M. G. Thorne)

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#### Acute Toxic Nephrosis

It has been known for a long time that in the acute renal diseases the tubules may be exclusively damaged, the classic example being bichloride of mercury poisoning. These diseases have been known as toxic nephrosis, hemoglobinuric nephrosis, and lower nephron nephrosis, however, other disorders are also known to cause a selective degeneration of the epithelium of the tubules. It has become well established that a long list of causative factors such as trauma, burns, infections, and poisons of many kinds may produce tubular damage of some degree.

It remained for Lucké to gather a large variety of disorders and show that the pathologic lesion was essentially the same in all of them—that is, a degeneration and often necrosis limited to the distal segments



of the tubules with brown casts of some heme compounds in the lower nephron and collecting tubules. Because of the location of the lesion in the distal convoluted tubules, Lucké coined the term "lower nephron nephrosis" for this entire group of cases.

As investigative work, both clinical and pathologic, became intensified, doubt has been cast upon the specificity of the pathologic lesion described by Lucké. There is no unanimity of opinion among pathologists that the lesion is strictly limited to the lower nephron in all cases; some believe the upper or proximal convoluted tubules are also involved, and some believe that the glomeruli are not without changes. As Allen points out, in some typical cases of so-called lower nephron nephrosis the tubular epithelium of the lower segment may hardly be involved at all. He also states that the necrosis of the tubular epithelium of the lower nephron is often inconspicuous. Furthermore, a multitude of disorders may produce various degrees of nephrosis in the entire tubular system. Sometimes the upper nephron is more involved than the lower; in other cases the lower nephron seems to bear the brunt of damage, and in still others both segments are involved. From observation of these acute tubular disorders, it is the author's opinion that the term "acute toxic nephrosis" is the one of choice, as in many instances the proximal convoluted tubule is damaged as well as the distal tubule.

For the purpose of this presentation the author studied 66 cases of acute toxic nephrosis; 29 of the patients recovered and 37 died. A variety of conditions was responsible for the renal damage, but the clinical picture was uniform regardless of whether the lower nephron was most extensively diseased, both the upper and lower nephrons were involved, or the proximal convoluted tubules were almost exclusively damaged.

The pattern of renal dysfunction and the clinical course in nearly all patients are practically the same regardless of the nature of renal damage. First there is a period of shock or near shock; second, a stage of anuria and oliguria, and finally, after a few weeks, termination in an abrupt onset of diuresis and recovery, or death from uremia or heart failure or both. This identical clinical picture is exemplified by case reports, especially of bichloride of mercury poisoning in which the proximal tubules are heavily damaged and yet the clinical picture is exactly like that of lower nephron or hemoglobinuric nephrosis.

As yet there is no correlation between the kidney lesion and the clinical features but, once the disease sets in, oliguria and anuria become the common denominators. Some of the problems regarding the pathogenesis of these clinical features require further investigative work. However, the author's experience with these cases suggests that in toxic nephrosis the entire tubular apparatus and perhaps the glomeruli, too, to some extent, may be more or less maximally or minimally involved.

The chief aim of treatment is to tide the patient over the critical period of anuria and uremia and to give the kidney a chance to carry on its own

work when tubular regeneration takes place, in approximately 2 weeks. Treatment is directed toward preventing heart failure, cerebral damage, or uremia—the results of renal dysfunction, especially the electrolyte imbalance. Conservative treatment of these patients often gives gratifying results. However, within recent years interest has centered around the use of artificial measures for eliminating the toxic metabolites from the body in an attempt to tide the patient over a critical period of uremia and give the kidney a chance to be restored to normal. The author's experience has been mostly with the use of the artificial kidney. It has been customary to use the artificial kidney on about the seventh or eighth day in cases in which there are no signs of spontaneous recovery. The case of a patient successfully treated by this method is presented in detail. (Postgraduate Med., Sept. 1952, F. D. Murphy)

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Incidence of Leukemia in Survivors of the  
Atom Bomb in Hiroshima and Nagasaki, Japan

The concept of irradiation as a leukemogenic agent is not new. A considerable amount of experimental work in animals has been done concerning the effects of irradiation and its possible relationship in the development of leukemia. There is general acceptance of the experimental evidence that leukemia may be produced in susceptible species of animals by exposure to roentgen irradiation. Reports suggesting that man may be similarly affected have appeared since 1911 but the evidence was less convincing. Martland in 1931 reported that contact with radioactive substances and x-rays produces alterations of which the principal objective symptoms are leukopenia, more rarely a leukemia, and an anemia of the aplastic type. Recently, March reported that leukemia occurred as a cause of death more than 9 times as frequently in radiologists as in nonradiologic physicians in the United States.

In 1948 the Atomic Bomb Casualty Commission initiated the first survey of the incidence of leukemia in whole human populations exposed to high energy radiation by the explosion of an atomic bomb. The aim of the investigation was to obtain information concerning all individuals in Hiroshima and Nagasaki having onset of symptoms of leukemia or dying of the disease since the atomic explosion in 1945. It was found that data previous to late 1947 were unreliable and insufficient because of the destruction of records and the general medical conditions prevailing.

The purpose of this report is to present data on the incidence of leukemia and deaths from leukemia in the survivors of the bombing in Hiroshima and Nagasaki during the years 1948, 1949, and 1950 and to compare the incidence and death rate from leukemia in individuals exposed to radiation at various distances from the hypocenter.



The incidence and death rate from leukemia was compared in the exposed and nonexposed populations of Hiroshima and Nagasaki and also within the exposed population by distance from the hypocenter.

The data showed an increase in the incidence of leukemia in the total exposed populations compared with the total nonexposed populations of the 2 cities. A highly significant increased incidence of leukemia was found in the subjects exposed to the radiation at distances of less than 2,000 meters as compared with those exposed beyond 2,000 meters.

Analysis of medical radiation histories in exposed subjects with leukemia presented evidence of severe radiation injury in a high proportion of the cases exposed under 2,000 meters. There was little evidence, by this same analysis, of severe radiation injury occurring beyond 2,000 meters.

The same pattern of findings of the collective analysis was present in the data obtained separately in Hiroshima and Nagasaki.

Leukemia in the cases exposed both under 2,000 meters and over 2,000 meters occurred most frequently in the early and intermediate age groups.

Acute leukemia and myelocytic leukemia predominated in all cases regardless of the individual's distance from the hypocenter at the time of the bomb explosion. Chronic lymphatic leukemia was observed in only a single case. The number of cases was small and the types of leukemia observed were not inconsistent with the age distribution in which they occurred.

Comparative differences in the sex distribution in the cases of leukemia were slight and the total numbers too small to warrant any conclusions. (Am. J. Med., Sept. 1952, J. H. Folley, W. Borges, and T. Yamawaki, Hiroshima, Japan)

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### Vitamin B<sub>12</sub> in the Treatment of Viral Hepatitis

The treatment of viral hepatitis is largely symptomatic with emphasis on bed rest and diet. These principles of therapy are especially important in the management of this disease in military personnel who have been debilitated by the rigors of combat. Because there is no chemotherapeutic agent currently available to which the virus of hepatitis is susceptible, attempts to hasten the recovery of patients from this disease should be directed at stimulating hepatic repair.

During the period from July 1, 1950, through July 31, 1951, 2,541 United Nation's military personnel with viral hepatitis were treated at the U. S. Army Hepatitis Center in Japan. An excellent opportunity was afforded for the observance of the various aspects of the disease. The epidemic, per se, will be described in other articles.



The present investigation was undertaken to study the effect of the administration of vitamin B<sub>12</sub> on the course of viral hepatitis. The authors' interest in this problem was stimulated when one of them (F. W. P.) observed marked improvement in the appetites of anorectic postoperative battle casualties following the intramuscular administration of vitamin B<sub>12</sub>.

The data used in this report were collected from 3 groups of 100 patients each. All 3 groups were given a diet consisting of 150 gm. of protein, 350 gm. of carbohydrate, and 100 gm. of fat. In addition to the diet, 8 ounces of a high-protein milk formula were given after each meal and at bed time. The total daily intake was 4,000 calories. A check of the patients' trays was made after each meal, and the caloric value of the food left was estimated. The patients were given 10% glucose in water by vein or high-protein milk formula in lieu of the food which was not eaten. Bed rest was required of all patients with allowance for one bathroom privilege daily.

Group I received 5 gm. of brewer's yeast 3 times daily and 2 multi-vitamin tablets 3 times daily in addition to the diet and bed rest. Patients who were severely anorectic received 2 cc. of liver extract daily for varying lengths of time. Although these patients comprise what is considered to be a control group, it is realized that refined liver extract contains vitamin B<sub>12</sub> in small amounts but the number of patients who received liver extract was small, and the amount of vitamin B<sub>12</sub> contained therein is considered negligible.

Group II received only the prescribed hepatitis diet and bed rest. High-protein milk formula and intravenous glucose were judiciously administered to maintain the necessary caloric intake during the period of anorexia. The patients in Group III were treated in exactly the same fashion as those in Group II, except that vitamin B<sub>12</sub> was given by mouth in the dose of 30 micrograms daily for the first 5 days of hospitalization. Ten patients in this group were given 30 micrograms of the drug by the intramuscular route once during the first 5 days of hospitalization. Gastric analysis of 20 patients in Group III revealed normal gastric acidity. There was no change in the quantity of hydrochloric acid secreted by these patients after vitamin B<sub>12</sub> was administered by mouth for 5 days. It was assumed that the drug was absorbed when given by the oral route since it has been shown by Berk, et al. that patients with pernicious anemia show satisfactory hematologic responses following oral administration of vitamin B<sub>12</sub> with normal gastric juice.

The following results were observed: 1. The patients who received vitamin B<sub>12</sub> had a more rapid return to normal appetite and liver size than did the patients in the other 2 groups. 2. The total serum bilirubin values of all the patients in the vitamin B<sub>12</sub> group were normal after the tenth week of illness, whereas 18 weeks were required by Group II, and 24 weeks by Group I. 3. The mean duration of illness, calculated from the date of the onset of the first symptom to the date the liver function tests became

normal and remained so, was 48.7 days for the patients who received vitamin B<sub>12</sub>, 54.4 days for those who received the prescribed diet and bed rest only, and 56.7 days for those who received the conventional hepatitis regimen. 4. There were 5 instances of relapse in the latter group, 4 such instances in the group receiving diet and bed rest, and only 2 among the patients given vitamin B<sub>12</sub>. 5. Experimental work links vitamin B<sub>12</sub> to nucleoprotein metabolism and, hence, liver repair. Its role as a lipotropic agent is further evidence of its importance in liver diseases. The relationship of vitamin B<sub>12</sub> to folic acid in this process is considered. (Am. J. M. Sc., Sept. 1952, MAJ. R. E. Campbell, MC, USA, and COL. F. W. Pruitt, MC, USA)

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### Stuttering—A Prophylactic Program for Its Control

Stuttering is one of the oldest ailments known to man. Treatment has varied throughout the ages. Originally, the focus of treatment was upon the tongue. Medication, surgery, and gadgets of all kinds were applied. Mechanistic technics and methods of various kinds have been attempted for the last 40 years, usually with only partial or temporary relief. Psychologic approaches have varied from suggestion, distraction, and hypnosis, to full psychiatric care, usually without satisfactory results in older stutterers. The proponents of all theories claim some success, but the situation is that most therapists today admit that a complete cure in an adult is rare. There has been a tremendous amount of research at the university level, involving neurologic, biochemical, brain, metabolic, and dietary studies, with very few positive results.

The evidence today indicates that if stuttering, as defined by the specialist, is not cleared up by the time the child enters school, his condition will more than likely become progressively worse, not only symptomatically, but emotionally, unless he gets intensive treatment. Stuttering in most cases has its onset between the ages of 2 and 4 and frequently, although the precipitating factors no longer exist in the older child, the memories of stuttering and the accompanying fears and anxieties remain, keeping the stuttering alive. Stuttering perpetuates itself because of the fear of stuttering.

In treating stutterers under 5, however, it is found that the results are quite different. At the early age when the therapeutic approach is directed toward the emotional and personality problems of the child and his environment, the prognosis is good. Not only does the stuttering disappear but the emotional climate of the environment improves. These clinical findings have also been observed by other workers in the field.

When a preschool child is referred with the complaint of stuttering, the child demonstrates speech deviations that are significantly different



from "normal" speech. The repetitions exhibited are of a rapid, compulsive, staccato nature, with obvious signs of tension. It is not unusual to see a 3-year-old child while prolonging a sound, thrust his head forward and up, straining the neck muscles. Many of the muscle tensions observed in older stutterers during prolongations have been observed in the young stutterer. Marked hesitations has been observed in some cases, accompanied by some of the "secondary features," such as gasping, eye blinking, foot stomping, and word substitutions. The pitch level of these children, as a rule, is much higher during conversational speech than during side remarks or in reciting memorized material. One could fairly say that these children show definite evidence of anxiety feelings while speaking. It has been interesting to observe that as improvement is noted, there is a definite drop in pitch level. The lowering of pitch seems to be one of the first indications of a lessening of tension.

Speech is an unstable function and will frequently reflect the emotional and personality make-up of an individual. In the young child whose speech and language patterns are inadequately integrated, emotional and social pressures will tend to reflect in nonfluency. It is only when the emotional pressures or inner unrest can be altered, that speech can take on a relaxed form. However, this approach is only effective in the young stutterer.

When a child is referred to the clinic for stuttering a thorough case history is obtained from one or preferably both parents for the purpose of understanding the pertinent factors in the child's life experiences and his environment. The data from this interview is used to determine the possible sources of tension, unrest, insecurity, and other emotional factors which may contribute to the inhibition of the child's speech development. The presence of emotional disturbances which disrupt a child's normal speech development is further indicated by the presence of more emotional manifestations in stuttering children than can be found in so-called "normal speaking" children.

At the first interview, while the history is being obtained from the parents, the child is given a careful psychometric and psychologic evaluation, and is provided with a situation in which he can be free to express his feelings without fear of adult criticism or comment. During the interview, the following similarities in these children as a group have been observed: They appear inhibited and are uncomfortable in being separated from their parents. Their interest span is short and their ability to find something that satisfies them in play is limited. When aggressiveness is shown, it is done in a most guarded manner, with a quick glance at the clinician to observe her reaction. Once the "free" situation is sensed, they often test the limits of the situation.

After the history is obtained and the child is examined, the problem in general is discussed with the parents. An attempt is made to help the parents understand the dynamics in the case, stripped of the emotional coloring that generally confuses and prevents them from dealing adequately

with the situation. In some cases, after the parents have had an opportunity to discuss the problem in this setting, they are able to recognize the source of the difficulty without too much help.

In a few cases at the second interview the therapist is informed by the parents—"the child doesn't stutter anymore!" Obviously the pressures and tensions have been removed from the child's environment and the stuttering has disappeared.

More generally, marked improvement is noted. Then the therapist continues clarifying the disturbances that were elicited during the initial interview. The parent and child are seen by separate therapists, allowing even more freedom and confidence in the clinical situation. When the child senses the atmosphere of acceptance and permissiveness, he is able to indulge in self-expression. He is also given the opportunity to release his feelings of hostility and anxiety through the various play technics. The therapist's approach to the child's speech is always indirect. First of all, her own speech must at all times reflect the relaxed, permissive atmosphere of the clinic situation. A conscious effort is made to keep pitch level low and rate of speaking moderate. The children unconsciously reflect this manner of speaking which provides symptomatic relief as well as emotional release in the clinic situation. Telling stories, playing echo games, singing songs, are all indirect ways of providing the child with situations in which he can be relaxed and thereby helping him to establish a consistent pattern of speech.

The mother's part in therapy cannot be stressed too strongly. Most of the mothers describe themselves as being highstrung, nervous, and lacking in patience. Observations have been that as a group, they are rigid, domineering, perfectionistic, overanxious and overprotective of their children. The child's improvement is directly related to the mother's ability to change her standards and to respect the child as a person with rights and privileges, and not as someone upon whom she can exert her own anxiety.

A mothers' group has become an essential part of the "early therapy" program. Here, amazing insight was gained by a group of 8 or 10 mothers of preschool stutterers, as they became aware of how their personalities and problems affected their children's lives.

Improvement is never noted in terms of "speech" alone. It is observed in the play of the children in numerous ways. The shy, inhibited, tense child becomes robust, noisy, friendly, and outgoing. He even looks different. The gross body movements in play become relaxed. There is a noticeable change in his play behavior. The fearfulness is dropped. The clinician, at the first interview, becomes an adult who is trusted and in whom the child feels free to confide. Certainly the speech shows obvious changes. Often the first improvement is a drop in pitch level. Sometimes repetition persists for a time, but the obsessiveness and rapidity are greatly reduced.



The total picture of the parents, the child, and the environment takes on a wholesome, happy, relaxed atmosphere. (Am. J. Pub. Health, Sept. 1952, P. J. Glasner and M. F. Dahl)

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Intraspinal Tumors in Children  
Resembling Anterior Poliomyelitis

It should be re-emphasized that conditions other than poliomyelitis may present a symptomatology of sudden onset of paralysis, stiff neck, fever, and mild pleocytosis in the spinal fluid. Intraspinal tumors are among the conditions which may produce such a picture. Ingraham found 5 cases originally diagnosed as anterior poliomyelitis among 16 cases of intraspinal tumors in infancy and childhood. Buchanan observed that almost all cases of spinal tumors in infants were first diagnosed as polio or amyotonia congenita.

Spinal tumors are not rare in children according to Grinker and Bucy. It may be that many still go undiagnosed by the fact that their symptoms resemble those of other diseases. Many are benign, and even among those tumors not generally so considered, operation may give long periods of relief or possibly cure.

Instances of sudden onset of symptoms with intraspinal tumor have been reported in both adults and children. That this may be the case in metastatic tumor in older age groups is well known. However, that it may also occur in connection with benign tumors may be surprising to those unfamiliar with this field. Naffziger and Brown report a 42-year-old man whose first symptom, pain, began abruptly when doing heavy lifting. He was found to have a neurofibroma. Sudden onset with paralysis is more characteristic in children. These authors also report a 7-year-old boy whose flaccid paraplegia came on in 2 days, and who was found to have a hemangio-endothelioma. Ingraham writes of a child 10 years 10 months of age in whom weakness and ataxia of the right hand and arm came on in a period of 2 weeks. She had an intraspinal meningioma. He reports another 5-year-old patient, sent in by the Infantile Paralysis Commission, and having undergone an orthopedic operation to correct her "contracture," in whom a meningioma was discovered. Another, 13 months old, with inability to hold up her head for 4 weeks and diagnosed as polio, was found to have a neurofibroma. Six of Ingraham's sixteen patients had neurofibromas, meningiomas, or cholesteatomas.

In 3 of Ingraham's patients, as well in the author's, stiff neck was present. It was not necessary that the tumor be located in the cervical region.

Both Naffziger and Brown and Ingraham report cases with fever, probably related to the tumor. As in the author's case, fever appeared to be



associated with fairly rapid onset of symptoms. It was not confined to tumors of the cervical region where interference with the spinal cord is known to be accompanied by fever.

Two of Ingraham's patients as well as one of the author's showed an increase of white blood cells in the spinal fluid. One of Ingraham's patients had 31 white blood cells per cu. mm. and the other 1,200 white blood cells.

The first patient in this series had all of the above findings. Unfortunately, it was not a benign tumor.

That the differential diagnosis between anterior poliomyelitis and spinal cord tumor may be difficult is demonstrated by these cases. It must be borne in mind that intraspinal tumor can simulate polio and the physician must consider what is characteristic of each disease, and not merely what may be possible. A spinal fluid protein of over 300 mg. per 100 cc. may be possible in polio, but it is not characteristic. Some sensory changes may, temporarily, be possible in polio, but they are unusual. On the other hand, both of these findings are characteristic of intraspinal tumor. (J. Pediat., Sept. 1952, W. R. Chambers)

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#### Pectus Excavatum

Pectus excavatum is a congenital deformity having insidiously progressive physiologic and psychologic manifestations. The essential abnormality of pectus excavatum or funnel chest is posterior angulation of the gladiolus. The manubrium is not appreciably displaced. The gladiolus slopes toward the vertebral bodies. The xipho-sternal junction may even be in contact with the vertebral body. The costal cartilages attaching to the gladiolus slope sharply inward to their chondro-sternal articulations. The cause of this condition is not clear, but there is a substernal fascia which appears to fix the lower end of the sternum. The heart is displaced to the left in direct proportion to the degree of deformity. The defect often is progressive with growth. The antero-posterior diameter of the central tendon of the diaphragm and its sternal attachments apparently remain relatively constant as the thorax grows. Brodtkin in a study of the development of the diaphragm from 4 embryologic divisions, found that the anterior division is tendinous and rigid in pectus excavatum.

The physiologic handicap is gradual. It is first manifested by decreased endurance and later by dyspnea, palpitation, and occasionally cardiac arrhythmia. Dorner believes that the limitations are caused by displacement and compression of the heart. He demonstrated by angiocardiology enlargement of the right atrium and ventricle with distortion of the tricuspid valve all of which disappeared when the deformity was corrected surgically. Electrocardiograms are not reported to be dis-



tinctive. They usually show right axis deviation and other abnormalities difficult to interpret.

The psychologic damage of this deformity to a child or even to an adult may be severe. For cosmetic reasons alone surgical correction is justified in individuals with distinct deformity. Most, however, also have cardiorespiratory handicaps although some are not aware of the handicap, having never experienced normalcy.

The satisfactory end results reported justify operative correction of pectus excavatum. In general, the earlier the procedure is carried out, the simpler it can be. In infants, simple elevation of the sternum and division of the substernal attachments may be adequate. In older children and adults, results are uncertain unless some form of support is supplied. External traction requires passage of wire through the skin and must, therefore, be temporary. Even then infection is invited. The use of either autogenous or bone bank ribs as struts supplies support of indefinite duration. It is simple and satisfactory. It avoids the use of foreign material and leaves no tract for infection to enter. Early mobilization of the patient is possible. (Dis. Chest, Sept. 1952, F. M. Woods, R. H. Overholt, and H. E. Bolton)

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#### Peyronie's Disease Associated With Dupuytren's Contracture

Among the diseases of the penis, Peyronie's disease occupies an interesting and unique position when it is associated with Dupuytren's contracture.

The authors became interested in the associated occurrence of these two conditions and questioned patients presenting either disease in regard to the other. Many of the patients seen on the surgical service with Dupuytren's contracture were frank to admit that the penis curved when erect, although this information would never have been given if specific inquiry had not been made. Likewise, many of the patients seen because of Peyronie's disease had definite Dupuytren's contracture, although they were not concerned about the condition of the hands. In both conditions, the patient usually waits until the disease is far advanced before seeking medical care.

The authors report the findings in 10 patients who had both Peyronie's disease and Dupuytren's contracture. The youngest patient was 48 years of age while the oldest was 67. The average age was 57 years. The youngest patient ever seen with Peyronie's disease at this clinic was 42 years of age while the oldest was 78. Other authors report the occurrence in much younger patients, but this has not been the authors' experience.

The cause is unknown. Trauma, gout, diabetes, arthritis, old age, vitamin E deficiency, and hormonal changes in subcutaneous anlage have

been advanced as factors in the production of both conditions. Frequently Peyronie's disease first became evident after the death, divorce, or serious illness of the wife, or other conditions which required abstinence from sexual relations.

In about half the patients in this series, trauma could have played a role in the causation of both conditions, although in the other half this certainly could not have been true.

Penile induration and curvature together with some degree of Dupuytren's contracture was present in all of the cases studied. Pain on erection occurred in 7 and some loss of potency in 4. Both hands were involved by Dupuytren's contracture in 8, the right hand in 1, and the left hand in another.

Many authors have described the histologic similarity between Peyronie's disease and Dupuytren's contracture. Twenty years ago Hertzler stated that the disease usually starts in middle life with an indurated area on the dorsum of the penis. The induration may occur on the side of the penis and cause a lateral curvature rather than an upright curvature. These growths arise from oblique disks involving the tissues of the corpora cavernosa and the septum between them. The lesion is hard yet elastic. The skin glides freely over it. When the organ is flaccid nothing can be seen on inspection. It is only on palpation and erection that the lesion becomes obvious. The lesions are made up of dense fibrous tissue, the bundles of which may interlace and form wavy bundles. Hertzler stated that they were difficult to section and that the nuclei were small, sparse, and spindleform. In both conditions he found a lack of inflammatory cell reaction and believed that there was a definite relationship between the 2 conditions.

The patients in this series were treated with 100 mg. of alpha-tocopherol 3 times a day for 6 to 12 months. No untoward effects from the administration of the drug were observed over this period.

In most cases, the results were better than were expected and the patients were satisfied with their improvement.

Four of the patients improved greatly and 4 moderately. Two thought that there was some improvement in both conditions.

Whether alpha-tocopherol improves these patients because of vitamin E deficiency or for some other unknown reason, the authors are unable to say. However, histopathologic and clinical studies of Peyronie's disease and Dupuytren's contracture have been made by several investigators and a great similarity between the two conditions have been found. Callomon discussed the etiology and pathogenesis of the 2 conditions in great detail in 1945. One could expect therefore, that any drug which benefits the one disease should also help the other.

The authors' do not mean to infer by this article that Dupuytren's contracture alone was treated by alpha-tocopherol at this clinic. Most of these cases have been operated on with good results. It has been the ex-



perience, however, that the treatment of Peyronie's disease by surgery, radium, or x-ray irradiation gave disappointing results. Because most of the patients were benefited by treatment with alpha-tocopherol the authors believe that further investigation along this line is justified. (J. Urol., Sept. 1952, J. I. Waller and W. C. Dreese)

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### The Nonsurgical Treatment of Cataract

Recently, in a large series of experimental animals, controlled induced cataracts were caused to regress to disappearance by the parenteral administration of fish lens protein extracts. Such cataracts could not again be reinduced experimentally with the original stress if, concurrently, fish lens protein extracts continued to be administered. As a result of these experiences the authors decided to administer a fish lens protein extract to human cataractous patients. The results obtained have been so promising that it was thought advisable to make this preliminary report.

The lenticular extracts are prepared by comminution of the lens tissues, their extraction with a physiologically compatible solvent, the removal of insoluble residues, and the sterilization of the final solution. Total protein concentrations are less than 2%, the pH is approximately 7.4; and although several thousand injections of the fish lens extract have been administered, no allergic reactions have been observed. Empirically, a dosage of 1.0 ml. administered 3 times weekly has been standard with all cases discussed in this preliminary report. Thirty or more times this dose (i. e., 0.5 ml/kg body weight for rats, given every day for several weeks) has produced no discernible untoward effects.

The first group, totaling 14 patients, has now had 4 or more subcutaneous injections of this extract. The degree of visual impairment has ranged from patients who had been unable to carry out their normal household duties for several years, or had been unable to move about the streets unattended, to patients manifesting only visual fogging. In all cases, after 4 injections patients have reported subjective improvement. Objectively, after 6 or more injections administered 3 times weekly, a diminution of lens opacities has been observed ophthalmoscopically. As a result of this treatment in several cases who have had 30 injections, the progress has been from a completely incapacitated individual to one with practically normal visual acuity. Most of the patients have been between 60 and 70 years old, and in most cases the cataracts have been typical senile opacities. Several of the patients had cataracts associated with diabetes and were hypertensive, or arteriosclerotic, or had combinations of these conditions. In all cases there has been a clearing of lens opacities, and retinal detail, which previously could not be seen, can now be studied with the ophthalmoscope.

Concurrently with these preliminary clinical trials, biophysical studies are being made that indicate tremendous differences between the proteins of the lens of the mammalian eye and those of fish lenses. The ultracentrifuge and the electrophoretic apparatus have been employed in these studies, and for the first time information on the distribution, molecular weight, and electrophoretic motilities of lenticular proteins has been obtained. Essentially the pattern that in the past was applied to blood plasma studies has been followed. It is expected that not only will the components of fish lenses be fractionated and characterized in the customary terms of electrophoretic purity, molecular weight and dimensions, configuration, electrical charge, et cetera, but that these fractions will be evaluated, utilizing the rat bio-assay already mentioned, in terms of biological activity. They will be published as soon as the data can be correlated, and the necessary calculations made.

Results in an additional 12 cases, selected more or less at random from nearly 100, which are to be the subject of an extensive and more detailed clinical report, are shown. No attempt is made to amplify the mitigating factors that affect visual acuity, such as retinopathy, which is not discovered until a clearing of the lens permits a detailed examination of the fundus; nor are the sketches and written descriptions of the ophthalmoscopic appearances of the opacities included. These data, as well as all other pertinent observations regarding co-existing pathologic conditions such as diabetes, hypertension, et cetera, and subjective changes reported by the patients, have been a normal part of the critical evaluation procedures employed. For the purpose of this brief and preliminary report, a record of the initial and final visual acuities, together with the ages of the patients and the number of injections received, should answer that first and most important question: "Is the patient's vision improved?"

Another clinical series involving approximately 50 patients is being observed and studied under conditions of the most critical scrutiny, and these results will be published as soon as available. In view, however, of the promise that this therapy has shown so far, this report is submitted in order that those interested in the subject may be advised of the work that is in progress. (Science, Sept. 12, 1952, R. F. Shropshire, J. R. Ginsberg, and M. Jacobi)

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#### Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.



Course in Medical Aspects of Special Weapons  
and Radioactive Isotopes

The second course for the fiscal year 1953 in Medical Aspects of Special Weapons and Radioactive Isotopes is scheduled to convene at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md., on Monday, 17 November 1952, and continue to Saturday, 22 November 1952.

The course will present problems likely to be confronted and techniques to be employed by medical and dental officers in the field of radiologic activity which are not available to officers in their civilian capacity. The subjects will be presented by speakers of outstanding prominence in their specialties; hence, it is assured the presentation will be interesting and informative to all Medical Department officers.

This course is conducted primarily for the benefit of inactive Reserve medical department officers; however, a limited number of officers of the medical department on active duty may be given "Authorization Orders" (no expense to the government) in accordance with paragraph 3 of BuPers-BuSandA joint letter of 30 November 1951. The Commandant of the 1st, 3rd, 4th, 6th, and 9th Naval Districts and Potomac River Naval Command, respectively, has been assigned a quota for this course. Inactive Reserve Medical, Dental, Medical Service, Nurse, and Hospital Corps officers who desire to attend this course should submit their request for 6 days training duty to the Commandant's office at the earliest practicable date. Meals and a limited number of sleeping quarters will be available. Quarters will be available on a first-come, first-served basis.

It is desired to invite inactive Reserve personnel's attention to the fact that acceptance of orders to attend these courses WILL NOT, in any way, increase the possibility of call to extended active duty of the personnel concerned. Therefore, inactive Reserve medical department personnel are encouraged to take advantage of this opportunity to attend this course on active training duty orders in a pay status. (Reserve Div., BuMed)

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Aviation Medicine Class

The Aviation Medicine Division of the Bureau of Medicine and Surgery desires applications from Medical Officers of the Regular Navy and Reserves on active duty of the rank of Lieutenant Commander and below for the next class in Aviation Medicine.

The class will be limited to about 30 students and will convene at the U. S. Naval School of Aviation Medicine, U. S. Naval Air Station, Pensacola, Fla., on 5 January 1953.

Upon completion of the 6-month course, those medical officers successfully completing the course will be designated as Naval Flight Surgeons and will be assigned to duty with the aeronautical branch of the Navy.

Widely diversified Aviation Medicine billets afford the Naval Flight Surgeon of today the opportunity to gain proficiency in any one of the many medical practices. Most all the medical specialties are required to be practiced within the aeronautical organization of the U. S. Navy.

Medical officers desiring to enroll for the course in Aviation Medicine should apply by official correspondence to the Chief of the Bureau of Medicine and Surgery, Aviation Medicine Division, and include in their request the following agreement of obligation: "I agree to remain on active duty for 1 year following completion of the course, or for 6 months beyond my obligated service, whichever is longer". (Av. Div., BuMed)

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#### Individual Requests for NavMed P-1333 Not Indicated

Numerous requests for "Instructor's Guide—Sanitary Food Service" (NavMed P-1333) have been received on NavExos 158 (3-50) (Stock forms and publications request) from individual ships and stations. Because the reserve stock of this publication is limited, distribution cannot be made on this basis. The book is designed for use by trained instructors and is not intended as a general reference or textbook. Orders should be coordinated through appropriate district or river commands ashore and type, force, or fleet commands afloat (see BuMed ltr BUMED-7221-FES-eal L16-3/J25 of 16 July 1952). Order through such command constitutes approval of that command, but single orders from individuals cannot be filled. (Prev. Med. Div., BuMed)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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From the Note Book

1. Less than 50 cases of frostbite among Navy and Marine Corps personnel have been reported from Korea for the 1951-52 winter season. During the winter of 1950-51, 3,017 cases of frostbite were reported. Of this number 2,739 individuals had frostbite only and 278 suffered battle injuries in addition to frostbite. (TIO, BuMed)
2. Captain C. W. Shilling, MC, USN, Special Assistant for Bio-Sciences at the Office of Naval Research and Director of the Research Division of the Navy's Bureau of Medicine and Surgery, and Dr. Howard T. Karsner, Research Advisor to the Surgeon General of the U. S. Navy will visit the West Coast during this month on matters pertaining to the general research program of the Navy. Enroute they will visit ONR Chicago Branch and Northwestern University. In the San Francisco area they will visit that ONR Branch Office, the Naval Biological Laboratory, the Naval Radiological Defense Laboratory, Naval Medical Research Unit #1, and Oakland Naval Hospital. In addition, the Pasadena Branch Office of ONR and universities in that locality, the Scripps Institution of Oceanography at La Jolla, and the Naval Electronics Laboratory at San Diego will be visited. (O. N. R.)
3. The Bureau's new scientific exhibit, "Radio Isotopes in Medicine", was presented at the District of Columbia Medical Society meeting from September 29 to October 1, 1952. Four subjects of wide interest in clinical evaluations and developmental research were presented: (1) A Method of Properly Evaluating Blood Substitutes; (2) The Use of Radioactive Colloidal Gold (AU-198) in Pleural Effusions and Ascites Associated with Malignancy; (3) A Method of Localizing Intracranial Neoplasms by the use of Radioactive Di-Iodo-Fluorescein; and (4) Cancer of the Thyroid Treated with I-131. (TIO, BuMed)
4. A BuMed scientific exhibit, "The Role of the Dentist in Atomic Disaster" was displayed, September 25-27, at the Annual Meeting of the Alumni Association of the University of Oregon at Portland, Ore. This exhibit pointed out by means of photographs, visual aids, color transparencies, and slides the desirability and importance of further training for dentists, both civilian and military, in order that they may be of the greatest possible assistance in the event of atomic disaster. (TIO, BuMed)
5. An Officer Correspondence Course in Hot Weather Engineering (NavPers 10915), is now available from the U. S. Naval Correspondence Course Center. This new course is specifically designed to familiarize Civil Engineer Corps officers with personnel and engineering practices in desert and jungle environments. Survival under adverse hot weather

conditions is discussed and construction problems peculiar to the tropics are outlined in detail. Regular or Reserve officers, Chief Petty Officers, and qualified enlisted personnel are eligible to take this course. (U. S. Naval Correspondence Course Center)

6. The authors report a case of hypernephroma of the kidney with metastases to the thyroid gland treated by surgical excision of both the secondary and primary lesions. Two years following surgery no other secondary lesions were demonstrable by either clinical or x-ray study. (J. Urol., Sept. 1952, W. S. Dempsey, G. Crile, Jr., and W. J. Engel)

7. Vesicular exanthema, trichinosis, and other swine diseases will be attacked through a cooperative plan being developed by the U. S. Department of Agriculture and the Public Health Service. Vesicular exanthema has affected thousands of hogs in 24 states in the past few weeks, and slaughter programs have been carried out in 14 states. In at least 12 states, all infected hogs have been slaughtered. Trichinosis is one of the most widespread of human diseases in the United States. Both vesicular exanthema and trichinosis are spread largely by the feeding of raw garbage to swine. (F. S. A., P. H. S.)

8. The fifth case of "cerebral and visceral inclusion disease" has been reported in a premature infant that lived less than 1 hour. The cause of the disease appears to be an unknown virus, evidently able to pass the placental barrier. (Am. J. Clin. Path., Sept. 1952, L. A. Kidder)

9. The preliminary findings of the experimental and clinical investigations of the Tissue Bank, Naval Medical School and the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., are presented in Postgraduate Medicine, Sept. 1952, LCDR. G. W. Hyatt, MC, USN, LTJG. T. C. Turner, MC, USN, LTJG. C. A. L. Bassett, MC, USN, LTJG. J. W. Pate, MC, USN, and LTJG. P. N. Sawyer, MC, USN.

10. The National Bureau of Standards has compiled a handbook containing x-ray protection recommendations, sample design problems, and methods for computing barrier thickness. This information should be valuable to architects and engineers planning structures in which x-ray equipment is to be used. The handbook may be obtained from the Superintendent of Documents, Washington, D. C., price \$0.15. (N. B. S., Dept. of Commerce)

11. The effect of a carefully planned rehabilitation program in preventing the apparently inevitable deforming sequelae in patients undergoing thoracic surgery is discussed in the Journal of Thoracic Surgery, Sept. 1952, A. Haas, H. A. Rusk, and W. N. Goodman.



12. The September 1952 issue of "Surgery" honors the Centenary of the birth of Doctor William Stewart Halstead, America's illustrious surgeon, whose precepts and practices are followed wherever modern surgery is performed.

13. The common entities of the shoulder girdle namely the supraspinatus syndrome, the frozen shoulder and bicipital syndrome, and calcified tenonitis and bursitis are covered in the Journal of the Iowa State Medical Society, Oct. 1952, F. G. Ober.

14. The treatment of trachoma with aureomycin and terramycin is discussed in the American Journal of Tropical Medicine and Hygiene, Sept. 1952, N. Guyen Dinh Cat, Hanoi, Indo-China.

15. Eleven cases of barbiturate poisoning treated successfully with amphetamine as the major analeptic drug are reported in the American Journal of the Medical Sciences, Sept. 1952, H. L. H. Dick.

16. Usually there is no cough or sputum caused by primary tuberculosis in the adult. Tubercle bacilli may be recovered from gastric or bronchial washings in a small percentage of cases, particularly when shadow-casting lesions appear in the lungs. (Dis. Chest, Sept. 1952, J. A. Myers)

17. A description of the eye-protection program developed at the Cleveland Tank Plant, Cleveland, Ohio appears in Industrial Medicine and Surgery, Sept. 1952, H. Kohn.

18. A fatal case of aplastic anemia following 2 days of chloramphenicol therapy involving a 6-year-old child is reported in the Journal of Pediatrics, Sept. 1952, CDR. T. E. Cone, Jr., MC, USN and CDR. S. M. Abelson, MC, USN.

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BUMED NOTICE 5215

22 Sep 1952

From: Chief, Bureau of Medicine and Surgery  
To: All Holders of BuMed Circular Letters

Subj: BuMed Circular Letters; cancellation of

1. The following BuMed Circular Letters are cancelled; 42-106; 42-219; 46-138; 50-41; 51-15; 51-35; 51-160; 52-36.

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BUMED NOTICE 7250

24 Sep 1952

From: Chief, Bureau of Medicine and Surgery

To: All Naval Hospitals

Subj: Report of Status of the Account, Suspense, Navy

Ref: (a) Par 53200-5(g)(IM 21-11) BuSandA Manual

1. This instruction directs that on or before the 8th calendar day of the month following last quarter, the disbursing officer shall be furnished a report of the funds deposited by the hospital in the Account, Suspense, Navy. All uncleared items remaining in the account in excess of 3 months shall be listed. A statement of action taken and an estimate of the month of disposition shall be included.

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Permit No. 1048

OFFICIAL BUSINESS

WASHINGTON 25, D. C.

DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERYPENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300